

Radiological and Nuclear Threats: an Overview

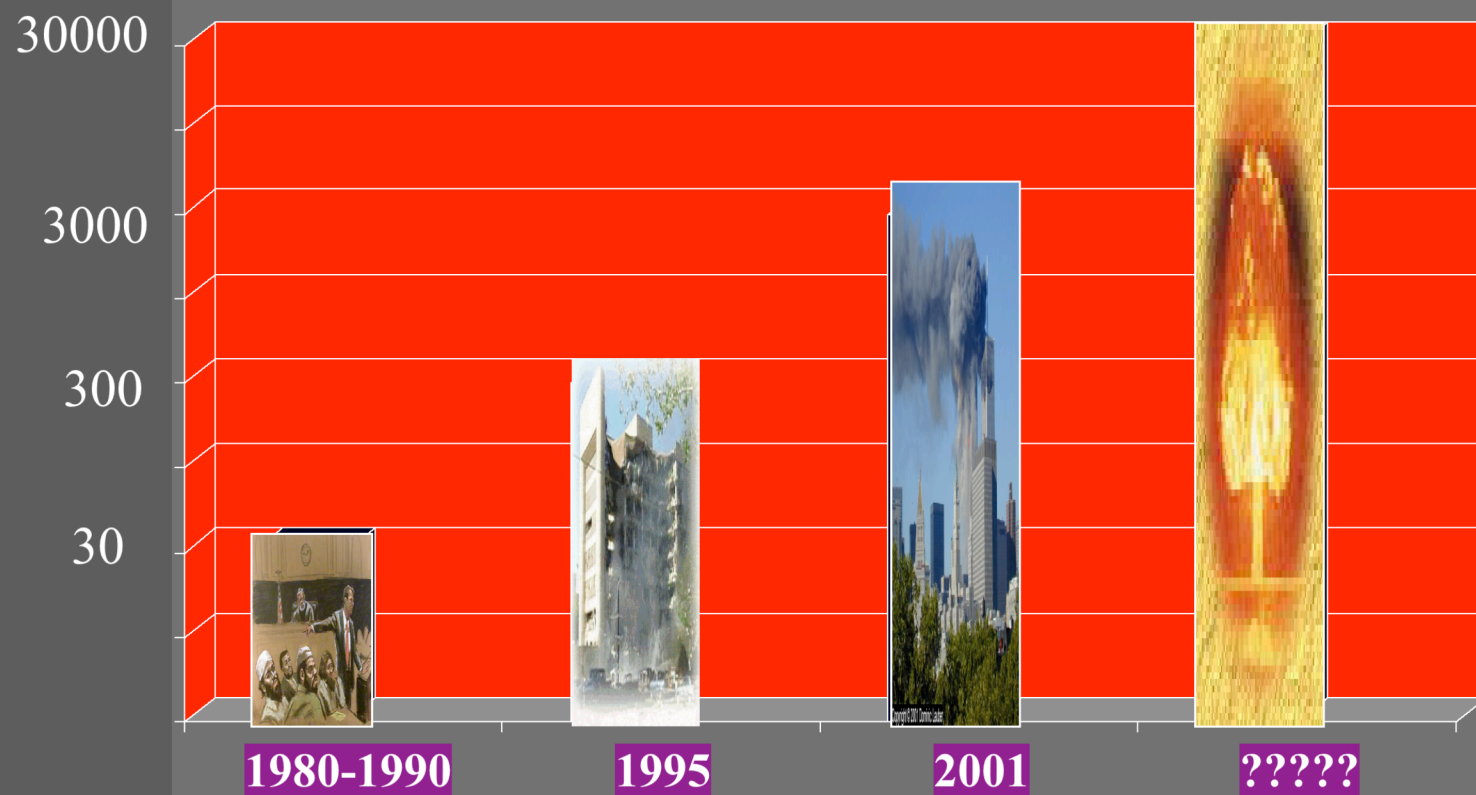
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Why are radiological and nuclear threats a concern?

- **Material and expertise resources**
 - Accumulation of materials, for example
 - Orphan radiological sources
 - Nuclear power industry
 - Excess weapons materials
- **Nuclear weapons information in public venues**
- **Financial resources available to terrorist organizations**
- **Increasing threshold for terror**

VIOLENCE TRENDS



RANGE OF POSSIBILITIES


← probability
consequence →



**Radiological
Dispersal
Device (RDD)**



**Nuclear
Reactor Attack**



**Stolen or
Improvised
Nuclear Weapon**

Industrial Isotopes

**Radiological
Dispersal**

Dud

Medical Isotopes

HE Dispersal

Nuclear Waste

Fizzle Yield



Nuclear Yield



Radiological Hazard

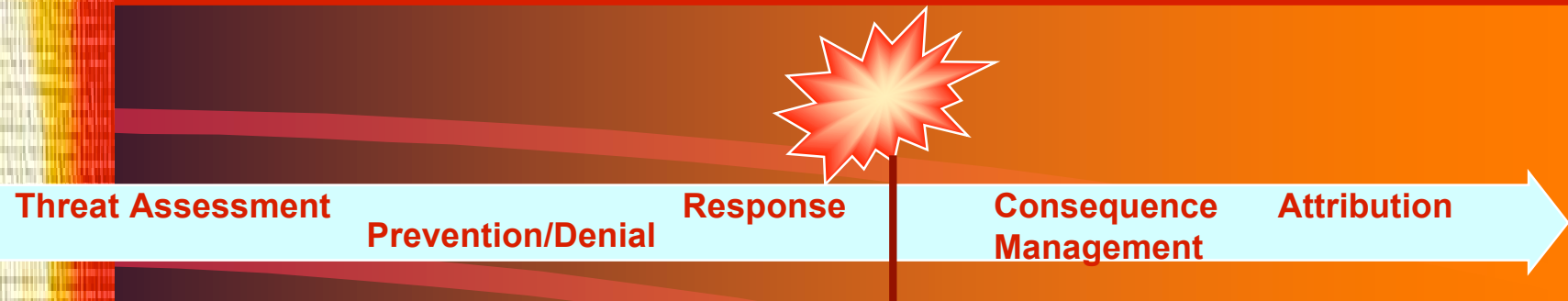
**Physical
Destruction**

What are some specific concerns?

“We continue to receive information indicating that al-Qa’ida still seeks chemical biological, radiological and nuclear weapons. Last year I also discussed al-Qa’ida’s efforts to obtain nuclear and radiological materials as part of an ambitious nuclear agenda. One year later, we continue to follow every lead in tracking terrorist efforts to obtain nuclear materials.”

George Tenet, Director of Central Intelligence
February 11, 2003

What can we do to address these threats?

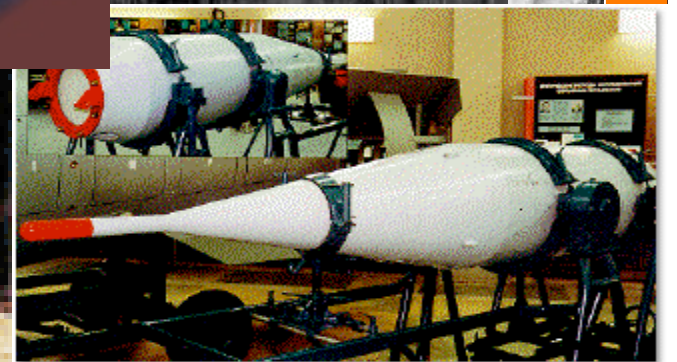
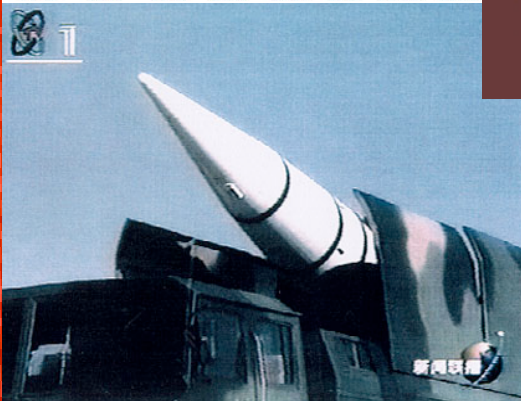


- Understand potential threats and our vulnerabilities
- Deny access to nuclear materials, controlled technology, needed infrastructure
- Detect threat development activities or threats in transit
- Develop and implement crisis response and consequence management tools

CHARACTERIZE POTENTIAL THREAT DESIGNS

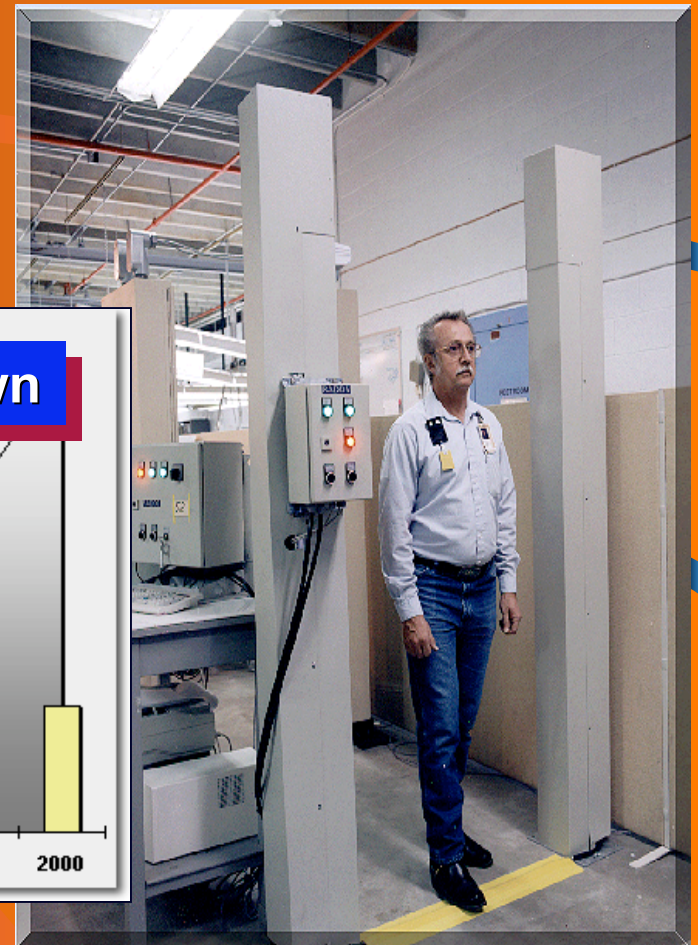
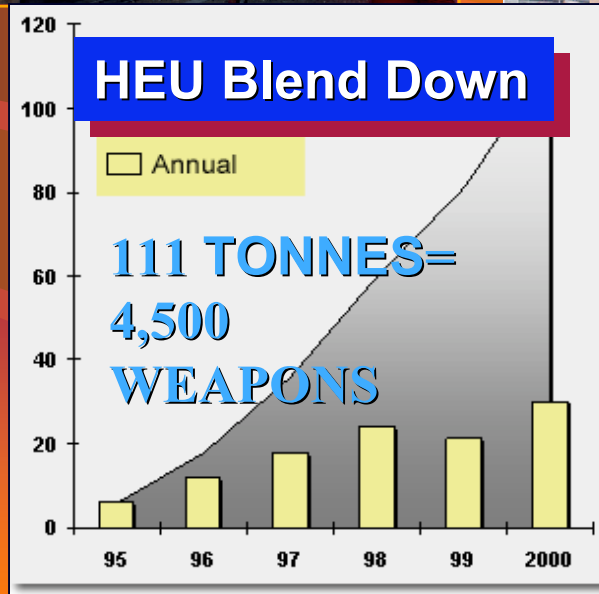


Nuclear Test Site, Lop Nur, China, 20 October

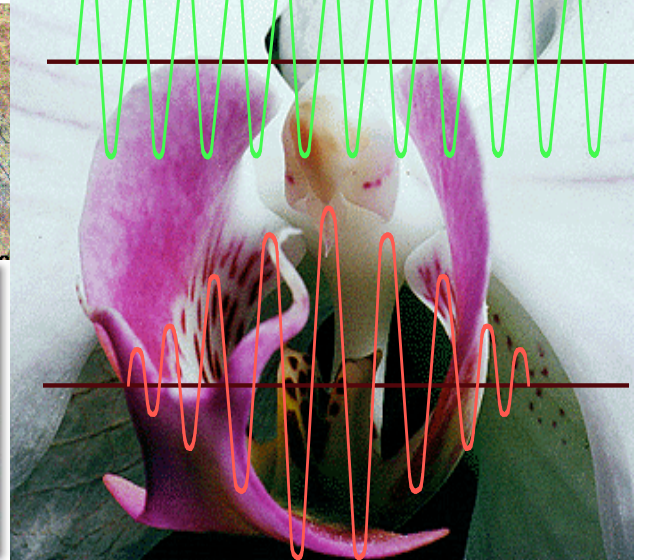
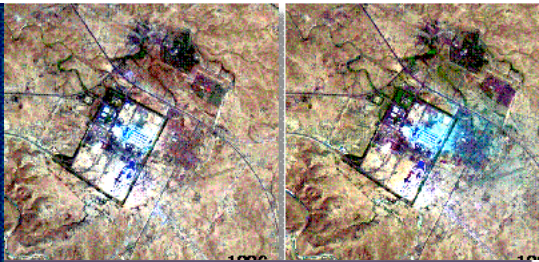
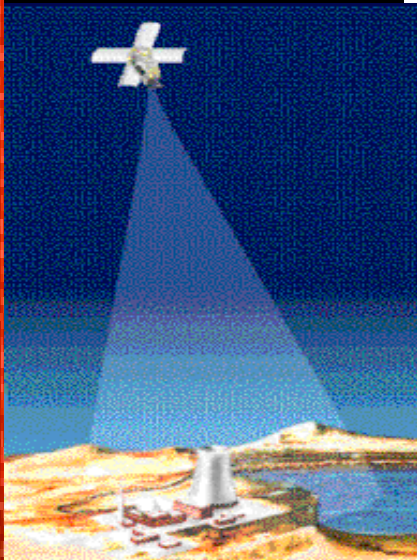
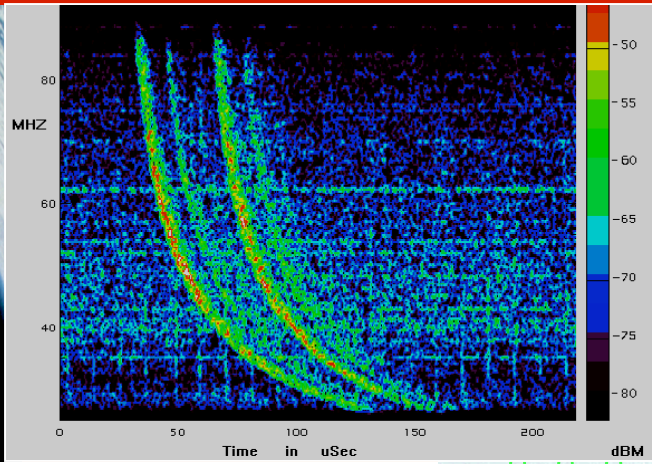
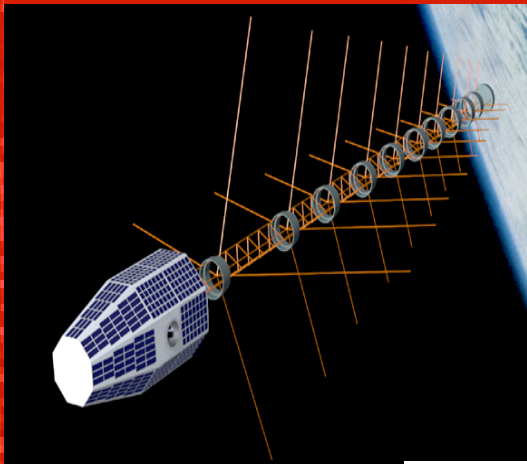


DENY ACCESS TO NUCLEAR MATERIALS

Aktau BN-350



DENY DEVELOPMENTAL SANCTUARIES



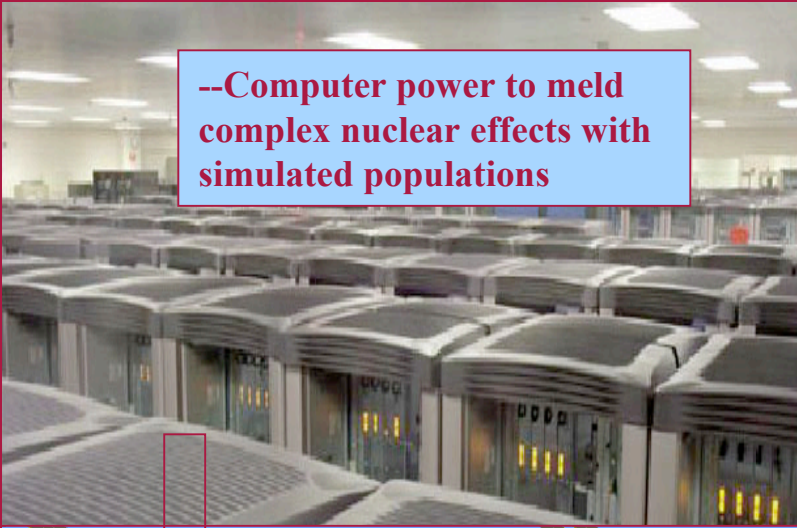
DETECT, LOCATE, CHARACTERIZE, RENDER SAFE



Train Portal Monitor at the
Astrakhan Seaport on the Caspian Sea



CONSEQUENCE SIMULATION & PLANNING



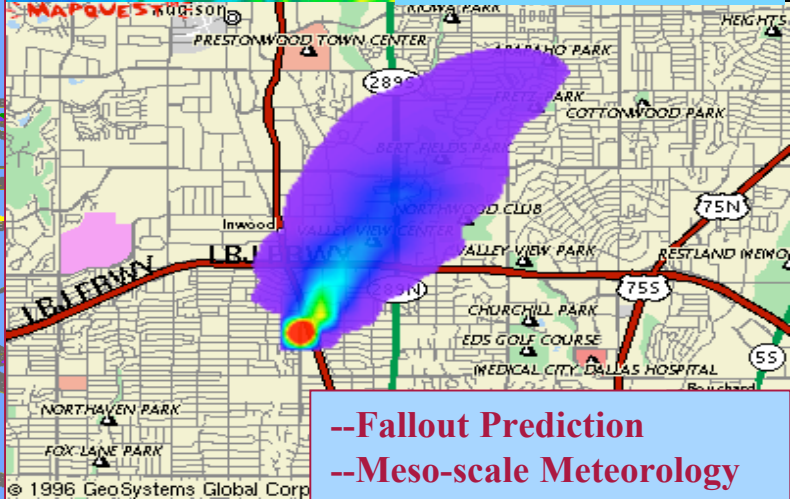
--Computer power to meld
complex nuclear effects with
simulated populations

Effects Modeling

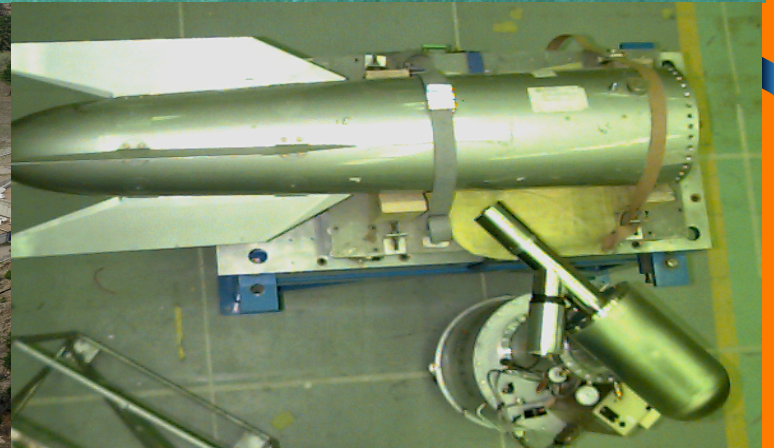


- Synthetic Population
- Activity Patterns
- Activity Locations
- Behaviors

- 
- Optimal Evacuation Routes
 - Responder Mobility Strategy
 - Second-by-Second Simulation

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- Fallout Prediction
 - Meso-scale Meteorology

TRAINING WITH REALISTIC COMPONENTS AND MATERIALS



Summary

- Nuclear and radiological threats have been identified and are a real concern
- It is imperative that we address these threats
 - near-term implementation of available resources/capabilities
 - longer-term efforts to assure all needed capabilities are available
- Well-coordinated, layered approach is essential

Acknowledgements

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